

lished his "Historical Survey of the Astronomy of the Ancients" in 1862, he threw cold water upon the attempts which had then been made to decipher the cuneiform inscriptions. He died the year after, just forty years ago last spring; had he survived until now, very different would have been the line which he must have taken. The wealth of the material since accumulated has made it impossible to reject the conclusions of Assyriologists, and though some of the early attempts have necessarily been modified, we have enormous results now in our hands from the library of Assurbanipal and other sources which cannot in the main be gainsaid. The consequences are indirect as well as direct. For if the Assyrian and Babylonian calendars are so ancient, there is no longer any reason to call in question the antiquity also of those of India, or to suppose that they derived this knowledge from the Greeks, who themselves express great respect for the Indian lore.

Now, with regard to the Chinese, if we may follow the obsolete, but perfectly correct, form used by Milton ("Paradise Lost," iii., 438), Miss Plunket's chapter on their calendar-system is worthy, like the rest of her book, of careful perusal. In China the year is now tropical, and does not begin either at the winter solstice or the vernal equinox, but at a time midway between these. But the Gregorian length of the calendar-year was really introduced into that country by some Jesuit fathers who obtained great influence at the Chinese Court early in the seventeenth century. The date used as that of the commencement of the year began much earlier. Their old reckoning was reformed by the Emperor Tchuén about the year corresponding to B.C. 2500, and many indications point to the conclusion that it originally began, like the Accadian calendar, at the winter solstice about B.C. 6000. Miss Plunket comments on the circumstance that this is two thousand years before the creation of man according to the Ussherian chronology, formerly inserted in the margins of our Bibles; but she rightly remarks that a consideration of the variations of the readings in different ancient versions has shown that no reliance can be placed on the Ussher theory, and his dates are accordingly not inserted in the margin of our revised version.

On one point it may be worth while to take exception to a remark by our author about the Julian reformation. There is every reason to believe that it was then known that the true length of the year was several minutes short of  $365\frac{1}{4}$  days, but Cæsar probably thought the insertion of a bissextile every fourth year was near enough for all practical purposes. It was unfortunate that his rule was at first misunderstood. But Pope Gregory, in 1582, not only ordered certain future centurial leap-years to be dropped, but omitted ten days from the calendar that the vernal equinox (and other seasons) might fall as at the epoch of the Council of Nicæa. Miss Plunket concludes these chapters by once more directing attention to the identity of the earliest astronomical traditions of the nations of the east, which suggests matter for reflection. Her book is excellently illustrated throughout, but the second part consists of a series of illustrations of ancient constellations with descriptive letterpress;

although we have not space to enter into this at length, we cannot refrain from mentioning the ingenious suggestion that the position of Pegasus was originally upright, the horse striking the vase of Aquarius with his hoof (p. 251). The whole is very carefully printed, and a full index is provided.

W. T. L.

#### PHYSIOLOGICAL CHEMISTRY.

##### *A Laboratory Manual of Physiological Chemistry.*

By Ralph W. Webster, M.D., Ph.D., and Walde-mar Koch. Pp. 107; 21 plates. (Chicago: the University of Chicago Press; London: William Wesley and Son, 1903.) Price 6s. 6d. net.

THE introduction to this manual is written by Dr. A. P. Mathews. He dwells upon the rapid development of physiological chemistry, and the efforts which are being made to bring it into closer touch with the biological sciences. He therefore considers it necessary that the science should be presented in a broader way than has hitherto been the case, and implies that the present manual meets this requirement. I therefore proceeded to study the work with considerable expectations of profit, especially when I considered that it was an outcome from the laboratories of the University of Chicago, which have, in recent years, produced so much of original and valuable work in various physiological fields.

I have closed the book with a feeling of great disappointment. The ideal the authors have set before them has not been realised; in fact, it is not often I have read a book which is so full of faults. It has a few good points; every teacher can always learn something from other teachers; the idea of inserting a chapter on the general characters of the cell, taking yeast as an example, is a good one; the directions given for the examination of milk from the sanitary standpoint form a new and useful departure in such text-books. In several other particulars, a competent teacher will glean some useful hints in adding to or amending his repertory of class exercises.

It was, however, for the student that the book was originally written, and for him it is practically useless.

From some points of view the work is a pretentious one, giving information on complex subjects which indicate a desire on the part of the authors to be considered up to date; but this character is lamentably lacking on many questions where one should have expected to find recent and important work described in detail; thus there is no reference to work of Bayliss and Starling on the pancreas, no mention of the distinctions between the euglobulins and pseudoglobulins, and the description of the urinary pigments is hopelessly out of date.

The arrangement of the exercises may be logical as the preface states, but it is absolutely unpractical. For instance, the first exercises the student is set to work out are the preparation of lecithin and cholesterol from the yolk of the egg. The egg may be the starting point of life, but the complicated methods necessary for the obtaining of a complex fat like lecithin hardly

form a suitable introduction to the study of physiological chemistry, but would have come more fittingly after the student knew a little about the nature of the simpler fats. There is, moreover, little or no indication of the relative importance of the substances described; the space devoted to cystin and cerebrin, for instance, is entirely disproportionate to their importance.

The description of the analytical methods is most slipshod; they are usually given in telegraphic or note-book English; they are interlarded with questions, "why is this?" or "what does this mean?" which, in the case of the majority of students, will remain for ever unanswered, for nine out of ten will never take the trouble to "consult this or that text-book," or "ask the instructor," which is the only answer the present work affords.

The omission of small but often important points is not confined to the description of the more complicated methods of analysis, but is seen also in those which are elementary; thus in the directions given for the making of hæmin crystals, the application of heat is omitted; in the description of the Adamkiewicz test, the student is left in doubt as to whether the glyoxylic acid to which the reaction is due is contained in the substance to be tested or the reagents added. In the description of the biuret reaction, no indication is given of its value as a diagnostic test between the native proteids and the products of proteolysis; in the description of the nitric acid test for proteoses, the most characteristic portion of the test, namely, the reappearance of the precipitate on cooling, is omitted; the only experiments relating to blood-clotting are those connected with the inhibitory influence of oxalates; those who follow the directions given for the performance of Hopkins's method of uric acid estimation will fail because of the omission of small details; in Gmelin's test for bile pigments the important detail that *fuming* nitric acid must be used is left out; directions are given for testing for iron in the liver, but no directions for the preliminary removal of blood from the organ; uric acid is spoken of as the result of metabolism of the white blood corpuscles, but the essential fact is omitted that it is from their nuclei, and the nuclei of other cells also, that this substance originates. We are told that ammonium urate is apt to be mistaken for globulin in urine, but no means are furnished of distinguishing the two; and in another part the student is led to suppose that true peptones may appear in the urine. The only method given for the estimation of urea is the hypobromite process, and the apparatus recommended, that of Doremus, is one of the least satisfactory for the carrying out of this test, the importance of which is now mainly historical.

Such are a few of the faults of omission with which the pages abound. Let us next turn to instances of faults of commission, the actual mistakes with which the book bristles. The coagulating points of the muscle proteids are wrongly given, and the most important proteid of all, myosmogen, is altogether left out; histone is classified with the native albumins, and globin with the globulins; for the performance of the biuret test, heating is recommended; in the phenylhydrazine test for dextrose, it is stated that crystals

only appear on cooling; indol and tryptophan are spoken of as synonymous; starch is stated to be convertible into sugar by acid in a *few* minutes; in the preparation of serum globulin, water is recommended for washing the precipitate; the sugar formed by the pancreatic juice is stated to be glucose; to obtain the iodine reaction with glycogen boiling with the reagent is the means adopted; the yellow colour of urine is ascribed to a mixture of several pigments not yet isolated, to which are added in brackets the astonishing words "called by Garrod urochrom." Albumose is stated to be a normal constituent of blood; at least that is how I read it, though I admit the passage is so obscure that it might equally well read the other way; the old misstatement that gelatin does not give Millon's reaction is perpetuated; students are led to suppose that the reaction of normal human urine is alkaline; at all events they are told to ascertain whether the alkalinity is due to fixed or volatile alkali; and as a final instance of the careless way in which the book has been prepared, the name of v. Fleischl is persistently misspelt. This does not by any means exhaust the list of glaring errors with which the book abounds, but enough has been said to show that this is an unsafe work to place in students' hands.

W. D. HALLIBURTON.

#### POPULAR AMERICAN ENTOMOLOGY.

*The Insect Folk.* By Margaret Warner Morley. Pp. vi+204; illustrated by the author. (Boston and London: Ginn and Co., 1903.) Price 2s.

*Ways of the Six-Footed.* By Anna Botsford Comstock, B.S., Lecturer in Cornell University Extension. Pp. xii+152. (Boston and London: Ginn and Co., 1903.) Price 2s.

THESE are two popular publications on the insects of North America, and may conveniently be noticed together, though, except that they are uniform in size and appearance, and are both by ladies, there is little resemblance between them.

The first is for young children, and seems to be intended partly as a reading book, for it is in very simple language, and is mostly in words of one or two syllables, and all long or technical words are explained in a glossary at the end of the book.

We are pleased to see that children are advised to keep insects under observation, and not to kill them, except in the case of those which are injurious.

Neuroptera, Hemiptera, and Orthoptera are the orders dealt with, and the first chapter is on dragon-flies, which are more numerous and of more varied colours in America than in Europe.

We may, perhaps, quote one of the longer sentences.

"I once went up the side of a beautiful mountain in North Carolina, where was such a mighty host of cicadas in the trees that I could not hear my companion speak, and a little way off the noise sounded like a torrent of rushing water."

Notwithstanding the simple style of the book, the authoress has contrived to include in it a good deal of information that will be new to most people who are not fairly well acquainted with entomology; and part